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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER	
GREEN, M	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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1- File Copy

PTO-90C (Rev. 2/95)
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Office Action Summary	Application No. 09/235,062	Applicant(s) SCHIFFER, JEFFREY L.	
	Examiner Miguel D. Green	Art Unit 2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☒ Claim(s) *4 and 7* is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 January 1999* is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15)☒ Notice of References Cited (PTO-892)
16)☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18)☐ Interview Summary (PTO-413) Paper No(s). _____ .
19)☐ Notice of Informal Patent Application (PTO-152)
20)☐ Other:

DETAILED ACTION

Drawings

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

2. The drawings are objected to because in Figure 6, it is counterintuitive for one to be able to view the components (120 & 121) from the top as stated (p.4, line 18). It had just been previously indicated (p.4, line 14) that a view from the top of the intentional radiator system (100) would show the antenna (140) first and foremost, disregarding the skin (105) (see Figs. 3 & 4). It is further assumed for the purpose of this examination that the PCB layers (126-128) are not transparent. As such, it would be impossible to see said components (120 & 121) from the top view, in keeping with the conventional orientation. Correction is required.

Claim Objections

3. Applicant is advised that should claims 1 and 2 be found allowable, claims 4 and 7 respectively will be objected to under 37 CFR 1.75 as being substantial duplicates thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ke.

Regarding claims 1 and 4, Ke teaches an apparatus comprising an antenna structure (50) including a load (52), a resonator (54), and a metallic conductor grounding surface (69) (see Figs. 5A-5C). The said resonator is interpreted to be one aspect of an intentional radiator as being present here. In one embodiment taught by Ke, the antenna structure is partially encased in electromagnetic shielding covers that are connected to (and thus coupled) to the grounding surface/plane (see Figs. 6A-6D). Furthermore, just as the applicant discloses that the ground plane itself could be used to provide part of the shielding (p.11, lines 21-23), Ke teaches said electromagnetic shielding cover that can also be used as the grounding surface for the antenna structure as a whole (col.5, lines 39-42). The partial shielding enclosure in this embodiment provides for an opening for omnidirectional radiation signals. Ke does not teach the reduction of radio emissions in so structuring said apparatus.

However, the concept of shielding is well known in the art to have the purpose of reducing the emission of undesirable electromagnetic radiation and/or its affects on an environment. It is well known that shielding employs a continuous metallic conductor and is based on theoretical application of Gauss' law: if a surface is a closed conductive surface, then no

charge can enter or leave the surface, i.e. the passage of electromagnetic radiation is prevented. Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention for shielding and the ground plane to be employed primarily to reduce radio emissions through the opening, so as to prevent undesirable exposure of the surrounding environment to electromagnetic radiation that would interfere with the operation of other electronic equipment and possibly cause harm to living tissue.

Regarding claims 2 and 7, Ke teaches via holes and ground strips to provide a connection for coupling the grounding surface to the shielding cover (see Figs. 6A & 6C).

Regarding claims 3 and 5, Ke teaches the antenna structure mounted on a multi-layer printed circuit board (PCB), with the grounding surface and antenna elements (resonator and load) contained on different planes. It is clearly evident here that the antenna elements are contained on the top layer (first plane 90) of the PCB while the grounding surface (119) is located one layer below (second plane 115) (see Figs. 6A & 6C).

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ke as applied to claim 1 above, and further in view of Andersson.

Ke does not teach a skin covering for the opening in the antenna apparatus. However, Andersson teaches an antenna unit with ground plane and shielding contained in a structure that includes a radome (21) covering, which for the purposes of this examination shall be interpreted to be a skin covering (see Fig. 5). It would have been obvious to one of ordinary skill in the art at the time of the invention for the apparatus taught by Ke to also include a skin covering of the

radome type taught by Andersson, in order to protect the antenna unit from environmental hazards while still allowing the passage of electromagnetic radiation through said skin covering.

7. Claims 8 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ke as applied to claim 1 above, and further in view of Hemmie et al (hereinafter Hemmie).

Regarding claim 8, Ke teaches the intentional radiator apparatus as discussed above (section 5). Ke does not teach the apparatus comprising a radio frequency (RF) module. However, Hemmie teaches an antenna apparatus that integrates electromagnetic radiation feed elements and RF modules with electronics for performing signal filtering, down conversion, and output amplification. It would have been obvious to one of ordinary skill in the art at the time of the invention for the apparatus taught by Ke to also include RF module(s) to provide similar signal processing, so as to create an antenna already integrated and operational within a radio communications system such as a PCMCIA fax-modem card.

Regarding claim 18, Ke not only teaches the antenna with ground and shielding apparatus as discussed above (section 5), but also teaches the means for enabling such an apparatus, by virtue of the structuring of said apparatus. Since the metallic shield and grounding structures (i.e. apparatus) do in fact perform the electrical shielding and grounding functions, Ke teaches a functional means inherent in the very construction of the apparatus.

Regarding claim 19, Ke teaches an electromagnetic cover as a shielding means but does not teach this means for shielding comprising metallic paint or metal enclosure. However, it is well known in the art that shielding employs a continuous metallic conductor. Typical shielding means involve a metal enclosure or coating the enclosure with a paramagnetic, electrically

conductive material (i.e. metallic paint). It would have been obvious to one of ordinary skill in the art at the time of the invention for the apparatus taught by Ke to employ a metallic conductor as its shielding means, so as to perform the shielding function in accordance with standard and proven practice and Gauss' law.

Regarding claim 20, Ke teaches the antenna apparatus with ground and shielding coupling as discussed above (section 5), but does not teach the coupling means comprising a mechanical or soldered connection between intentional radiator and shielding means. However, Hemmie teaches an integrated antenna unit with shielding connection by means of soldering and grounding clips designed mechanically to firmly position and hold shield in place (particularly note Fig.10). It would have been obvious to one of ordinary skill in the art at the time of the invention for the means taught by Ke to have also included a mechanical or soldered connection for shielding, in order to appropriately connect electronic components and thereby properly enable a solid shielding function.

8. Claims 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hemmie.

Regarding claim 9, Hemmie teaches an antenna device to be shielded and integrated with RF component modules to comprise a microwave system such as a multi-channel multi-point distribution system (MMDS) (also termed "wireless cable"). Hemmie teaches RF components being shielded in shielding enclosures soldered to a ground plane, with an arcuate cutout (296) so as to provide desired signal pathway (see Figs. 4, 6 & 10). Hemmie further teaches the reason for shielding as to eliminate the potential for IF frequencies passing through and entering the active circuits (col.6, lines 57-60), i.e. to reduce unwanted RF exposure. Hemmie teaches the antenna

system to be used to receive radio signals, but does not teach the transmission of signals as in the case of an intentional radiator.

However, it is well known in the art that an antenna can act as either a receiver or a transmitter of radio signals, or both as in the case of a wireless transceiver, for example. It would have been obvious to one of ordinary skill in the art at the time of the invention to allow the MMDS receiving system as taught by Hemmie to further comprise functionality as an intentional radiator, i.e. also act as a transmitter, in order to provide a user a means to not only receive but also transmit data in keeping with a modern trend for consumer-desirable, two-way data transmission over wireless media.

Regarding claim 10, Hemmie teaches a weatherproof housing (230) for the antenna feed (see Fig. 4). The pathway followed by radio signals to shielded RF components includes entry at the driven elements (310 & 320) contained within said housing and through the opening (296). The feed housing acts as a skin covering to protect the elements along this pathway and likewise covers the opening from the signal's perspective.

Regarding claim 11, Hemmie teaches an intentional radiator/antenna device to be integrated with RF modules, with components being shielded, which altogether comprise a microwave system.

Regarding claim 12, Hemmie teaches the system comprising a printed circuit board (270) with the antenna feed via a balun (420) center conductor end (422) residing at the top layer on copper pads (411 & 412) and a ground plane (430) one layer below (see Fig. 4).

Regarding claim 13, Hemmie teaches the RF components are modular and grouped on oscillator and daughter boards and integrated to form the system (see Fig. 3).

Regarding claims 14-17, the method(s) for integrating components, positioning the antenna through the opening, and coupling shielding to ground via electrical (i.e. soldering) and/or mechanical (i.e. ground clips) connection is inherent in the teaching of Hemmie in constructing the structural apparatus and integrated system as discussed above. Furthermore, such methods for constructing RF component systems on printed circuit boards, using soldering and mechanical connections for coupling etc., are well known in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Miguel D. Green whose telephone number is 703-308-6729. The examiner can normally be reached on Mon - Fri (9am - 6:15pm) with second Mondays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne D. Bost can be reached on 703-305-4778. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-6296 for regular communications and 703-308-6306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Miguel Green
December 1, 2000

DWAYNE BOST
SUPERVISORY PATENT EXAMINER
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12-4-00